

ABSTRACT OF THE DISCLOSURE

A perfluoropolyether, a composition comprising the perfluoropolyether, a
5 process for producing the perfluoropolyether, and a process for improving the
thermostability of grease or lubricant are provided. The perfluoropolyether
comprises perfluoroalkyl radical end groups. The perfluoroalkyl radical has at least
3 carbon atoms per radical and is substantially free of perfluoromethyl and
perfluoroethyl end group. The process for producing the perfluoropolyether can
10 comprise (1) contacting a perfluoro acid halide, a C₂ to C₄-substituted ethyl epoxide,
a C₃⁺ fluoroketone, or combinations of two or more thereof with a metal halide to
produce an alkoxide; (2) contacting the alkoxide with either hexafluoropropylene or
tetrafluorooxentane to produce a second acid halide; (3) esterifying the second acid
halide to an ester; (4) reducing the ester to its corresponding alcohol; (5) converting
15 the corresponding alcohol with a base to a salt form; (6) contacting the salt form
with a C₃ or higher olefin to produce a prepolyether; and (7) fluorinating the
prepolyether. The process for improving the thermostability of a grease or lubricant
comprises combining the grease or lubricant with the composition disclosed above.